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A Study on Mobile Phone Buying Behavior Using an Image-based Survey

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Abstract

Realizing the significance of customer buying behavior in today's market scenario it is very appropriate to analyze the drivers that trigger the purchasing decision. This research paper identifies and analyses certain critical drivers of mobile phone purchasing decisions and explaining their relevance. Empirical research was conducted in this study through an image-based survey amongst college students in Pune city. In this paper three critical drivers to purchasing decision namely price, brand and brand ambassador were considered. The study adopted text based questions and image based questions to solicit the responses to find whether it had an impact on the responses. The study also ascertained how effectively an image-based survey can be administered to compliment the conventional text-based question survey.

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E-mail address: muazzam@scit.edu*Keywords: critical drivers; image based; text-based; purchasing decision*

1. Introduction

It has been not so recent that the telecommunications industry has been seeing an incremental graph and growth especially in the product domain. Today's market is highly volatile as regards to the dynamicity in the market with respect to brands and prices available in almost all the goods and services. Cell phones have seen capitalizing the market with a huge potential to grow as well as sustain. A lot of surveys are conducted world over to identify and understand customer preferences in cell phone buying. In this study of mobile buying decisions the authors have tried identifying the impacts of an image-based survey vis-à-vis the text based survey.

The price and brand of the products play an important role in the buying decision. A change in the price of a particular brand affects the buying decisions of the consumers. Future expectations about price changes can be another influential factor. The association of a brand ambassador to a product can create an impact on the preferences of the consumer towards purchasing the product. The brand in itself plays a major role in shaping an image about the products in the minds of the consumer. It is typically achieved by persuading them to buy the product or simply informing the consumers about it through different means.

Among the many parameters in a mobile buying decision three main parameters have been considered in this research namely price, brand and brand ambassador. The objective of this paper is to study the impact of the buying decisions based on these three parameters against any other decision drivers. The importance of these three variables has been studied and analyzed based on text based questions and image-based questions.

2. Review Of Literature

Didier Louis (2010) et al through their survey collected from young French consumers studied that the personality traits impact directly on one of the three relational consequences of trust, attachment and commitment to the brand. They proposed a model refining the overall understanding that the researchers and managers possess. Rock (2011) et al in their research findings through an article published mentioning about the potential in the mobile devices to support older adults in the range of 65 and above. An empirical study and analysis conducted by Tosell (2012) et al collected data for a specific age group and discusses about how they adapt the content, interface and physical appearance of their devices. The authors found that the adaptability and usage was wild. Thus a large span with respect to the smart phone personalization has been seen in the past. Chou (2012) et al through a study on customizations of mobile phones concluded in their results that text messages, battery contact, software design and display size need a very high level of customization in manufacturing of mobile phones.

Kim (2012) et al identified the relationship between the usability and the product success in cell phones through existing usability of mobile phones and factors that affect the success of the product. The study results showed that design, customer needs and innovativeness in the cell phones were the most important factors rates by the users.

Zhou (2011) in his empirical study conducted indicate that contextual offering has a strong impact on trust, flow and perceived usefulness which are the three major factors which determine the mobile purchase intention.

A study by Chen (2012) et al supported with the help of partial least square graph software based equation modeling approach reveal their interesting findings that the effects of the media characteristics such as interactivity and tele presence may have significant influences in the buying behavior of mobile phones. Persuad and Azhar (2012) through their study results about the talk about the three important motivational factors viz, shopping style, brand trust and value. The research also found that for company's value creation is largely based on building relationships and engaging customers.

Luca (2008) explains the role of brand in shifting preferences in the consumer buying behavior. The study highlights the underlined importance of brands and the dualism between marketing and technology of the technological products.

Bigne (2005) mention about mobile phones as a luxury item still and that there is a significant lack of research in this field. A conceptual model in their study developed states about independent decision making by the buyers in decision making. The theory of information overload has been in the limelight for many years. Chen (2009) et al in their research reinforce the importance of the information overload theory concludes that beyond a threshold, more information leads to worse quality of, but a better subjective state towards the buying decisions.

Zhuang et al in their empirical research found that there exists certain situational factors that impact the buying decisions of consumers in shopping malls. An analysis of the consumer characteristics that influence their buying decisions using a logistic regression model was proposed by Risel (2001) which reinforces the fact that consumers will buy products based on their perceptions about the product. Also that the products are perceived by the buyers with the significant motives that are supported by the buyers' characteristics. Hausman (2000) also proposed the impulse buying behavior is much complex and that the need to buy an item stems out of multiple desires to buy a particular product. Many studies on consumer buying behavior stress on the fact that the need to buy a product spreads across a variety of factors highlighting the price as a major factor.

Haghshenas (2013) through a review conducted for the consumer behavior and factors affecting the purchasing decisions which comprise of two factors viz. -controllable factors and uncontrollable factors. An insight into why consumers purchase counterfeit goods is still in its infancy and, as a result, studies in this research area are descriptive in nature (Staake, Thiesse & Fleisch, 2009).

3. Objective And Hypothesis Of Research:

Research Objectives

- a. To identify if the brand parameter in mobile buying decisions yield similar perceptions when queried through text based and image based surveys.
- b. To statistically validate any significant difference in the three drivers of purchasing decision.

Research hypotheses

H_0 : Brand $\mu_0 = \mu_1$ the mean of brand preference in mobile buying decision through text based question and image-based question will be same.

H_1 : Brand $\mu_0 \neq \mu_1$ the mean of brand preference in mobile buying decision through text based question and image-based question is different.

4. Methodology Of Research

In this research we used an image based presentation in conjunction with other text based questions to support our hypotheses. We conducted a survey containing pictorial representations of specific Mobile phones with Price, Brand and Brand ambassador. The observers were provided limited amount of time (4 seconds) to take a decision for buying the phone. The observers (Students in the age group of 22-26 yrs) were also asked to respond to text based questions which asked them the importance of Price, Brand and Brand Ambassador in their buying decision. Based on their instant responses for buying a product the study tries to correlate the responses on text based questions and image-based questions to ascertain if the buyers really have a strong impact of Price, Brand and Brand Ambassador in their buying decisions. Another objective of the study is to ascertain dependency on an image-based survey while evaluating buyers' responses to achieve a true representative analysis of buying decisions, provided the image-based questions are designed appropriately to extract accurate information.

5. Background And Scope

In this research study the authors intend to find out efficacy of an image based survey questioning and the corresponding analysis through a text based questions for specific parameters in mobile buying decision making process. The purpose of the research is to identify the kind of similarities or differences in responses when questions related to mobile buying is asked in a textual form versus that in an image based form. It also aims to identify the strength of responses from end users when they are asked the questions in text based or image based surveys.

For our research purpose the following experimental set-up was used and specific conventions were created to

analyze the responses.

- a) The questioning was concentrated on a specific age group of students from specific institute in Pune. The respondents were aware and already owning different and well known brands of mobile phones. This was also confirmed through the text based questions.
- b) The survey was conducted into two consecutive sections. The first section concentrated on verifying mobile buying preferences through traditional textual questions. The questions apart from other areas of evaluations concentrated on checking the importance of Brand, Price and Brand Ambassador in the buying decision. The second section replicated the same questioning related to Brand, Price and Brand Ambassador based buying preferences through images.
- c) Respondents were shown specific Brands of Mobile Phones with specific relevant information about the phone and asked to respond with a buying decision within 4 seconds of seeing the image.
- d) Images in a presentation format were mixed and shown to the respondents in a non-sequential fashion only for few seconds to enhance instant reaction of respondents for preferential decision making.

Hence for our research activity we define the following images to replicate the text based questions:

- i.Brand – Specific well-known mobile phones were shown with their brand Name, logo and respondents' preferences were noted.
- ii.Price – Specific well-known mobile phones were shown with their respective pricing and respondents' preferences were noted.
- iii.Brand Ambassador – Specific well-known mobile phones were shown with their respective Brand Ambassador and respondents' preferences were noted.

The image based survey was administered in four segments. The first segment consisted of the mobile phone image with the brand name and brand masked. The second segment consisted of the mobile phone image including brand name and brand with its price. The third segment consisted of the mobile phone, its price and a prominent personality. The fourth and final segment consisted of the mobile phone (prominently visible brand and brand name), its price and its brand ambassador.

This research limits its scope to the analysis of similarities or variances in responses related to specific independent variables for select mobile phone brands. The study does not intend to generalize the findings beyond the specific product and restricts its analysis to product being used by a target audience. The limitation of the study is three fold. The first is that only brand factor was considered for comparing the perception of responses between image based

and textual survey. Second limitation is that in total only three factors were considered for purchasing decisions. The 3rd limitation is that the sample size was affected by time and administrative limitations.

6. Data Analysis

The data for our research was obtained in two specifically independent parts such as a text based set of questions and image based questioning without prior explanation to the respondents. A paired sample t test was run using SPSS 20 tool to identify differences in perception between two sets of responses.

Analysis 1: In order to validate the similarity or differences between the two sets of responses we selected the Mobile Brand which was owned by 49.5% of the respondents, (hereinafter referred to as Brand1).

The Paired samples t test showed following result for a brand.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BR_Txt_Pref	3.87	97	.931	.095
	BR_Img_Pref	2.75	97	.936	.095

Table 1.1: Paired samples statistics

Data was collected from 97 individuals. There were 48 (49.5%) individuals currently owning the Brand of mobile phones. The data for responses for text based and image-based preferences were approximately normally distributed. The mean score for preference for Brand2 on text based responses was 3.87 +/- 0.931. The mean score for preference for Brand2 on image-based responses was 2.75 +/- 0.936.

	N	Correlation	Sig.
Pair 1 BR2_Txt_Pref & BR2_Img_Pref	97	.320	.001

Table 1.2 : Paired sample correlations

The Paired Samples Correlations test indicated weak correlation but significant difference. (p value being <0.05)

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 BR2_Txt_Pref - BR2_Img_Pref	1.113	1.089	.111	.894	1.333	10.074	96	.000

Table 1.3 – Paired samples t test

The paired samples t test showed that the change in the perceptions of scores was statistically significant ($p < 0.001$, $t = 10.074$). The 95% confidence interval for the difference was [0.894, 1.333].

We found that the text-based survey mechanism had larger scores than the image-based survey. We interpret that the difference between means of responses seen in Table 1.1, indicating low mean values for image based questions can be attributed to more informed decision making by the respondents. We hence state that the image-based responses look to be more matured and specific opinions as compared to the text based question responses.

Analysis 2: The One-way Anova test was conducted to check pair wise comparisons between responses for three brands around three parameters namely Price, Brand and Brand Ambassador. This test was done for both text based and image based responses.

The text based responses for brand showed the following one-way Anova result.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	46.275	2	23.137	25.188	.000
Within Groups	264.557	288	.919		
Total	310.832	290			

Table 1.4 – ANOVA - Txt_Based_Brand

The omnibus Null Hypothesis gave a p value of $0.000 < 0.001$ [$F = 25.19$]. The pair-wise comparisons with the Bonferroni correction showed the following results.

(I) Brand_Grp		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Brand1	Brand2	.113	.138	1.000	-.22	.44
	Brand3	.897*	.138	.000	.57	1.23
Brand2	Brand1	-.113	.138	1.000	-.44	.22
	Brand3	.784*	.138	.000	.45	1.11
Brand3	Brand1	-.897*	.138	.000	-1.23	-.57
	Brand2	-.784*	.138	.000	-1.11	-.45

Table: 1.5 - Dependent Variable: Txt_Based_BrandBonferroni

The mean of text based responses for brand3 versus brand1 and brand2 respectively showed a significant difference. (p=0.000)

But text based responses for brand1 and brand2 did not have significantly different means. (p=1.000)

The image based responses for brand showed the following result.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	51.278	2	25.639	20.354	.000
Within Groups	362.784	288	1.260		
Total	414.062	290			

Table: 1.6 - ANOVA - Img_Based_Brand

The omnibus Null Hypothesis gave a p value of $0.000 < 0.001$ [$F = 25.64$]. The pair-wise comparisons with the Bonferroni correction showed the following results.

(I) Brand_Grp		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Brand1	Brand2	.619*	.161	.000	.23	1.01
	Brand3	1.021*	.161	.000	.63	1.41
Brand2	Brand1	-.619*	.161	.000	-1.01	-.23
	Brand3	.402*	.161	.039	.01	.79
Brand3	Brand1	-1.021*	.161	.000	-1.41	-.63
	Brand2	-.402*	.161	.039	-.79	-.01

Table 1.7 - Dependent Variable: Img_Based_BrandBonferroni

The mean of image based responses for brand1 versus brand2 and brand3 respectively showed a significant difference (p=0.000). The mean of image based responses for brand2 and brand3 also showed a significant difference (p=0.039).

7. Findings, Conclusion And Future Scope

The first objective of this research work broadly wanted to analyze if an Image based survey yields similar responses as compared to the traditional text based survey. Based on the analysis done above we conclude that the brand parameter in mobile buying decisions yields different perceptions when queried through text based and image based surveys. We are thus rejecting the Null hypothesis H_0 : Brand $\mu_0 = \mu_1$ the mean of brand preference in mobile buying decision through text based question and image-based question will be same and it is proved that the means of responses in two methods are different.

The second objective was to statistically validate any significant difference in the three drivers of purchasing decision. An interesting observation from the results of ANOVA revealed that intra-group similarities of means can be attributed to the specificity for informed responses when audience is subjected to image based questions rather than text based questions. Amongst the three purchasing decision drivers analyzed we found the specificity for informed responses in imaged based survey relating to brand and brand ambassador and not for price.

In this research study we have restricted our scope to a particular product analysis based on only three significant purchase decision making drivers. In future the methodology to evaluate responses for buying behavior through image-based survey can be extrapolated and used in different domains to check the willingness to pay for a product or service. The authors also intend to measure effectiveness of this methodology on a different set of audience. We also foresee to make use of this methodology in future to assist in developing a scale to understand an unstated need of a product or product feature in different strata of consumers.

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